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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,506	05/24/2000	Muhammed A. Qureshi	Hernandez-Valencia 11-2-5	6396

7590 08/05/2004

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EXAMINER

RYMAN, DANIEL J

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/577,506	<b>Applicant(s)</b> QURESHI ET AL.	
	<b>Examiner</b> Daniel J. Ryman	<b>Art Unit</b> 2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-13, 15-24 and 26-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-13, 15-24 and 26-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.
2. Applicant's arguments with respect to claims 1-4, 6-13, 15-24, and 26-38 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

3. Claim 1 is objected to because of the following informalities: in line 8 "said set" should be "said first set". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 7 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 recites the limitation "said second set" in line 2. There is insufficient antecedent basis for this limitation in the claim. For the purposes of prior art rejections, Examiner will interpret "said second set" to be "a second set".

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 6, 29, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by

Miyao (USPN 6,219,337).

8. Regarding claims 1 and 29, Miyao discloses a method of and apparatus for reconfiguring pipeline sizes in order to relieve congestion in a packet-based network, said network comprising a plurality of gateway nodes (nodes which terminate virtual path) having data to be transferred therebetween, and utilizing a concept of virtual pipelines (virtual paths) between nodes of said network, said pipelines comprising one or more channels (virtual channel) (col. 1, lines 31-34; col. 5, line 56-col. 6, line 6; and col. 7, lines 15-col. 8, line 16), said method comprising the steps of and said apparatus comprising means for: (1) identifying a first set of virtual pipelines (expansion candidate) for which traffic exceeds a predetermined threshold (capacity greater than currently allocated capacity) (col. 7, lines 15-col. 8, line 16 and col. 10, line 39-col. 11, line 33); (2) for each virtual pipeline in said first set, determining pipeline size that would cause said traffic through said pipeline to not exceed said predetermined threshold (newly calculated capacity) (col. 7, lines 15-col. 8, line 16 and col. 10, line 39-col. 11, line 33); and (3) for each pipeline in said first set that can be increased in size, increasing its size to said size determined in step (2) (col. 7, lines 15-col. 8, line 16; and col. 10, line 39-col. 11, line 33, esp. col. 10, lines 51-61).

9. Regarding claims 6 and 30, referring to claims 1 and 29, Miyao discloses (4) for each pipeline that cannot be resized in accordance with step (3) (pipeline for which simple expansion is unsuccessful) (col. 10, lines 51-61), determining if a path exists that can accommodate a pipeline of said size determined in step (2) (col. 10, line 39-col. 11, line 33) where the path can

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be the same path on which the virtual pipeline currently resides; and (5) for each pipeline for which a path exists that can accommodate a pipeline of said size determined in step (2), creating a pipeline having said size, and directing all new channels between the corresponding gateway nodes through said newly created pipeline (col. 10, line 39-col. 11, line 33) where the newly created pipeline is the pipeline which has been resized.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2, 7-11, 17, 18, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyao (USPN 6,219,337).

12. Regarding claim 17, Miyao discloses a method of identifying pipeline (virtual path) size reconfiguration parameters in a packet-based network comprising a plurality of gateway nodes (nodes which terminate virtual path) having data to be transferred, said network utilizing a concept of virtual pipelines (virtual path) between nodes (gateway) of said network, said pipelines comprising a plurality of channels (virtual channels) (col. 1, lines 31-34; col. 5, line 56-col. 6, line 6; and col. 7, lines 15-col. 8, line 16), said method comprising the steps of: (1) identifying a first set of virtual pipelines (expansion candidate) for which traffic exceeds a predetermine threshold (capacity greater than currently allocated capacity) (col. 7, lines 15-col. 8, line 16 and col. 10, line 39-col. 11, line 33). Miyao does not expressly disclose that (2) for each virtual pipeline in said set, determining a number of channels that would cause said traffic

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through said pipeline to not exceed said predetermined threshold; however, Miyao does disclose for each virtual pipeline in said set, determining a virtual pipeline capacity that would cause said traffic through said pipeline to not exceed said predetermined threshold (col. 3, line 60-col. 4, line 8; col. 7, lines 15-col. 8, line 16; and col. 10, line 39-col. 11, line 33). Miyao also discloses that each virtual pipeline comprises a plurality of virtual channels (Fig. 5 and col. 7, lines 15-20) where increasing the capacity of the pipeline includes increasing the number of channels in the pipeline (add new channel) (col. 8, lines 30-40). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention, for each virtual pipeline in said set, to determine a number of channels that would cause said traffic through said pipeline to not exceed said predetermined threshold since each pipeline comprises a plurality of channels where additional channels result in additional capacity for the virtual pipeline.

13. Regarding claims 2, 18, and 33, referring to claims 1, 17, and 29, Miyao discloses that the predetermined threshold is a call blocking ratio (col. 8, lines 40-54); and wherein step (2) comprises determining a pipeline size that would reduce the call blocking ratio for said pipeline below said predetermined threshold (col. 8, lines 40-54 and col. 10, lines 44-56). Miyao does not expressly disclose that step (2) comprises determining a minimum pipeline size that would reduce the call blocking ratio for said pipeline below said predetermined threshold based on call arrival rate at said virtual pipeline and average holding time per call; however, Miyao does disclose that the capacity of the pipeline is calculated (col. 10, lines 44-56); that the capacity of the link is impacted by the arrival of new calls (col. 8, lines 40-53); that the capacity of the link comprises current calls (col. 8, lines 40-53); and that idle bandwidth on a pipeline, if not recaptured, can block calls on other links (col. 10, line 44-col. 11, line 33). Thus, it would have

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been obvious to one of ordinary skill in the art at the time of the invention to determine a minimum pipeline size that would reduce the call blocking ratio for said pipeline below said predetermined threshold in order to ensure that the pipeline does not contain excess bandwidth that will block calls on other pipelines if not recaptured. Additionally, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine a pipeline size based on call arrival rate at said virtual pipeline and average holding time per call since the arrival rate of the at the virtual pipeline and the average holding time per call impact the capacity of the pipeline.

14. Regarding claims 7 and 31, referring to claims 6 and 30, Miyao does not expressly disclose (6) deleting each pipeline in a second set for which a new pipeline was created in step (5) when no channels are utilizing said pipeline; however, Miyao does disclose that each link comprises a plurality of pipelines which in turn comprise a plurality of channels (col. 1, lines 9-33). Miyao also discloses that the system is reconfigurable in order to assure network performance by reassigning physical resources (col. 1, lines 9-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to delete each pipeline in a second set for which a new pipeline was created in step (5) when no channels are utilizing said pipeline in order to make idle resources available to other users.

15. Regarding claims 8 and 32, referring to claims 7 and 31, Miyao does not expressly disclose (7) for each pipeline in said first set that cannot be resized in step (3) and for which an alternate path is determined in step (4) not to exist, determining if a pipeline can be created that can accommodate a fraction of said channels in said pipeline by which said pipeline exceeds said threshold (Fig. 13 and col. 16, line 44-); (8) creating a new pipeline of a size corresponding to



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said fraction of channels determined in step (7) and directing said fraction of new channels from said pipeline to said new pipeline; however, Miyao does disclose for each pipeline in said first set determining if a pipeline can be created that can accommodate said channels in said pipeline by which said pipeline exceeds said threshold (col. 10, line 39-col. 11, line 33); (8) creating a new pipeline of a size corresponding to said number of channels determined in step (7) and directing said new channels from said pipeline to said new pipeline (col. 10, line 39-col. 11, line 33). Miyao also discloses that by increasing the capacity of the pipeline more channels can be accommodated (col. 10, line 39-col. 11, line 33). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention (7) for each pipeline in said first set that cannot be resized in step (3) and for which an alternate path is determined in step (4) not to exist, to determine if a pipeline can be created that can accommodate a fraction of said channels in said pipeline by which said pipeline exceeds said threshold; (8) to create a new pipeline of a size corresponding to said fraction of channels determined in step (7) and to direct said fraction of new channels from said pipeline to said new pipeline in order to accommodate a fraction of new channels even if not all of the new channels can be accommodated.

16. Regarding claim 9, referring to claim 7, Miyao discloses (9) identifying a second set of virtual pipelines (reduction candidate) for which traffic is less than said predetermined threshold (col. 10, line 39-col. 11, line 33); and (10) for each pipeline in said second set, determining a size of the smallest pipeline (reduction capacity) that can accommodate the traffic present in that pipeline while satisfying said predetermined threshold (col. 10, line 39-col. 11, line 33).

17. Regarding claim 10, referring to claim 9, Miyao discloses (11) reducing the size of each of said pipelines in said second set that can be reduced in size to said size determined in step (10)

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(col. 10, line 39-col. 11, line 33); (12) for each pipeline that cannot be resized in accordance with step (11), determining if a path exists that can accommodate a pipeline of said size determined in step (10) (col. 10, line 39-col. 11, line 33) where the path is, as broadly defined, the same path on which the pipeline is currently located; and (13) for each pipeline for which a path exists that can accommodate a pipeline of said size determined in step (10), creating a pipeline having said size, and directing all new channels between the corresponding gateway nodes through said pipeline (col. 10, line 39-col. 11, line 33) where the pipeline will accept new calls between the corresponding nodes.

18. Regarding claim 11, referring to claim 10, Miyao does not expressly disclose (14) deleting each pipeline in said second set for which a new pipeline was created in step (13) when no channels are utilizing said pipeline; however, Miyao does disclose that each link comprises a plurality of pipelines which in turn comprise a plurality of channels (col. 1, lines 9-33). Miyao also discloses that the system is reconfigurable in order to assure network performance by reassigning physical resources (col. 1, lines 9-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to delete each pipeline in said second set for which a new pipeline was created in step (13) when no channels are utilizing said pipeline in order to make idle resources available to other users.

19. Claims 3, 4, 12, 13, 15, 16, 19-24, 26-28, and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyao (USPN 6,219,337) as applied to claims 2, 18, and 33 above, and further in view of Berger et al. (USPN 6,266,322) in further view of Applicant's Admitted Prior Art (AAPA).

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20. Regarding claims 3, 19, and 34, referring to claims 2, 18, and 33, Miyao does not expressly disclose that the minimum pipeline size is expressed as a number of channels,  $M$ , in said pipeline; however, Miyao does disclose that each pipeline contains a plurality of channels (col. 1, lines 31-34) where the channels are added and removed from the pipeline (col. 8, lines 40-54). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to express the minimum pipeline size as a number of channels,  $M$ , in said pipeline since the pipeline is comprised of a number of channels where the channels are added and removed from the pipeline thus affecting the capacity of the pipeline. Miyao also does not expressly disclose that step (2) comprises determining a number of channels  $M$  by:

$$B_m(\lambda_d/u) = ((\lambda_d/u)^M / M!) / (\sum_{n=0}^M ((\lambda_d/u)^n / n!))$$

wherein  $p(t) = \lambda_d((t)/u(t))$  or  $p'(t) = \lambda_d(t) - p(t)/u(t)$  and wherein  $B_m$  = number of blocked calls;  $\lambda_d$  = call arrival rate at virtual pipeline  $i$ ;  $1/u$  = average holding time per call;  $t$  = time; and  $p(t)$  = non-stationary offered load at time  $t$  since Miyao does not expressly disclose how to determine the number of channels in a pipeline. Berger teaches, in a system for dimensioning bandwidth for links, that using an Erlang blocking model for determining dimensioning of links is well known in the art (col. 2, lines 20-44). Applicant admits that the given equation is a well-known Erlang blocking formula (page 20, line 6-page 22, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the given equation since it is a well-known Erlang blocking formula where Berger an Erlang blocking model is a well known link dimensioning technique.

21. Regarding claims 4, 20, and 35, referring to claims 3, 19, and 34, Miyao in view of Berger in further view of Applicant's admitted prior art discloses that  $p(t) = \lambda_d((t)/u(t))$  is

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used when call rate through said pipeline has been historically increasing and  $p'(t)=\lambda(t)-p(t)/u(t)$  is used when call rate through said pipeline has been historically decreasing (AAPA: page 20, line 6-page 22, line 17).

22. Regarding claims 12 and 23, referring to claims 3 and 20, Miyao in view of Berger in further view of Applicant's admitted prior art discloses that the network is an asynchronous transfer mode network (Miyao: col. 1, lines 9-11).

23. Regarding claims 13 and 24, referring to claims 12 and 23, Miyao in view of Berger in further view of Applicant's admitted prior art discloses that the network is used to exchange voice data (call) (Miyao: col. 1, lines 45-49 and col. 8, lines 41-54).

24. Regarding claims 15 and 26, referring to claims 3 and 20, Miyao in view of Berger in further view of Applicant's admitted prior art does not expressly discloses that the network interconnects a plurality of other networks; however, Miyao does disclose that the network carries telephone calls (col. 1, lines 45-49) which suggests that the network is connected to the telephone network. In addition, Examiner takes official notice that it is well known in the art to interconnect networks in order to allow a plurality of users to be connected across the networks. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the network interconnect a plurality of other networks in order to allow a plurality of users to be connected across the networks.

25. Regarding claims 16 and 27, referring to claims 15 and 26, Miyao in view of Berger in further view of Applicant's admitted prior art does not expressly disclose that the other networks comprises time division multiplexed networks; however, Examiner takes official notice that TDM networks are well known in the art. Therefore, it would have been obvious to one of

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ordinary skill in the art at the time of the invention to have the other networks comprise time division multiplexed networks since TDM networks are well known.

26. Regarding claims 21 and 36, referring to claims 19 and 34, Miyao in view of Berger in further view of Applicant's admitted prior art discloses (9) identifying a second set of virtual pipelines (reduction candidate) for which traffic is less than said predetermined threshold; and (10) for each pipeline in said second set, determining a size of the smallest pipeline that can accommodate the traffic present in that pipeline (reduction capacity) (Miyao: col. 10, line 39-col. 11, line 33).

27. Regarding claim 22, referring to claim 21, Miyao in view of Berger in further view of Applicant's admitted prior art does not expressly disclose (10) calculating a peak cell rate (PCR) corresponding to said number of channels determined in step (2); however, Miyao in view of Berger in further view of Applicant's admitted prior art does disclose calculating a capacity for the number of channels (Miyao: col. 10, line 39-col. 11, line 33). Miyao in view of Berger in further view of Applicant's admitted prior art also discloses that the system is implemented in an ATM network (Miyao: col. 1, lines 9-11). Examiner takes official notice that PCR is a well-known parameter in ATM systems for calculating capacity since PCR indicates the maximum amount of traffic that could occur on a connection at a given time. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to calculate a peak cell rate (PCR) corresponding to said number of channels determined in step (2) since PCR is a well known parameter in ATM systems for calculating capacity.

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28. Regarding claim 28, referring to claim 27, Miyao in view of Berger in further view of Applicant's admitted prior art suggests that the other networks comprise public service telephone networks (Miyao: col. 1, lines 45-50).

29. Regarding claim 37, referring to claim 36, Miyao in view of Berger in further view of Applicant's admitted prior art discloses means for reducing the size of each of said pipelines in said second set that can be reduced in size to said smallest size (Miyao: col. 10, line 39-col. 11, line 33); means for determining, for each pipeline that cannot be resized, if a path exists that can accommodate a pipeline of said smallest size (Miyao: col. 10, line 39-col. 11, line 33) where the path is, as broadly defined, the same path on which the pipeline is currently located; and means for creating, for each pipeline for which a path exists that can accommodate a pipeline of said smallest size, a virtual pipeline having said size, and for directing all new channels between the corresponding nodes through said pipeline (Miyao: col. 10, line 39-col. 11, line 33) where the pipeline will accept new calls between the corresponding nodes.

30. Regarding claim 38, referring to claim 37, Miyao in view of Berger in further view of Applicant's admitted prior art does not expressly disclose means for deleting each pipeline in said second set for which a new pipeline was created when no channels are utilizing said pipeline; however, Miyao in view of Berger in further view of Applicant's admitted prior art does disclose that each link comprises a plurality of pipelines which in turn comprise a plurality of channels (Miyao: col. 1, lines 9-33). Miyao in view of Berger in further view of Applicant's admitted prior art also discloses that the system is reconfigurable in order to assure network performance by reassigning physical resources (Miyao: col. 1, lines 9-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have means

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for deleting each pipeline in said second set for which a new pipeline was created when no channels are utilizing said pipeline in order to make idle resources available to other users.

### *Conclusion*

31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Morrison et al (USPN 5,854,903) see entire document which pertain to dynamically resizing virtual paths. Umayabashi (USPN 6,542,467) see entire document which pertain to dynamically resizing virtual paths. Matthews et al (USPN 6,084,858) see col. 3, lines 22-42; col. 3, lines 48-52; and col. 4, line 44-col. 5, line 4 which teaches, in a system for avoiding congestion on a link, for each link that is congested, determining if a path exists that can accommodate a link of equivalent size where it is implicit that the preferred alternate links will have an equivalent bandwidth unless the link is congested, and for each congested link for which a path exists that can accommodate a pipeline of equivalent size creating a link having said size.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The examiner can normally be reached on Mon.-Fri. 7:00-5:00 with every other Friday off.

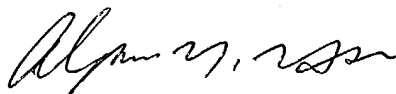
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703)308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel J. Ryman  
Examiner  
Art Unit 2665

<sup>DTZ</sup>  
Daniel J. Ryman



ALPUS H. HSU  
PRIMARY EXAMINER